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S O I L C O N S E R V A T I O N L I T E R A T U R E
SELECTED CURRENT REFERENCES

V.4

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"To furnish the right book to the right man at the right time is a problem that faces every student of agricultural affairs who would help men to better ways of farming."

Charles H. Greathouse

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Mildred Benton

Mildred Benton
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PERIODICAL ARTICLESBeach Erosion

Johnson, A.G. Vanishing beaches of southern California. West. City 16(5):22-25, illus. May 1940.

"Observations on man-made erosion of several beaches in southern California; planning for prevention of erosion."

Beavers

Beavers protect soil, wildlife. Utah fish and game board studies 380 colonies in Wasatch forest. The Rocky Mountain Husbandman 64(32):7. Aug. 15, 1940. 6 R59

"Original woodland engineers help regulate stream flow, reduce flood, prevent erosion, benefit fish, upland game birds."

Black Locust Propagation

Stoutemyer, V.T., Jester, J.R. and O'Rourke, F.L. Propagation of black locust clones by treating hardwood cuttings with growth substances. Jour. Forestry 38(7):558-563, illus. July 1940. 99.8 F768

"The retirement from cultivation of large acreages of eroded farm lands has required extensive use of many kinds of woody perennials to conserve the soil. This program has created an interest in improving the economic quality of these plants through superior clonal selections, in order to supplement the farm income under the revised farm management plans. Planting stock of the superior strains and varieties usually does not reproduce true from seed but must be propagated asexually. Recent discoveries in plant propagation methods open the way to developing low-cost production of planting stock from cuttings of woody plants, thus permitting extensive use of clonal selections of many plant species important in erosion control. The black locust (*Robinia pseudoacacia* L.) is an important species in this program. Exploratory studies now in progress have disclosed a number of apparently distinct strains, some of which possess qualities which surpass the ordinary run of this species in one respect or another. The superior strains may be grown by hardwood cuttings treated according to a procedure which promises to be applicable to quantity production."

Contour Planting

Erosion trouble. Amer. Fruit Grower 60(4):8, illus. Apr. 1940. 80 G85
Advocates contour planting and terracing of vineyards throughout the Finger Lakes district of central New York.

Flynn, R.H. Soil-conserving practices save farm labor, power, and equipment use. U.S. Soil Conserv. Serv. Soil Conserv. 6(2):49-51, illus. Aug. 1940. I.6 So3S

Article is based on data collected on a field basis in the Plum-Beaver

soil conservation district in Boone and Nance counties, Nebraska for 1939, in an attempt to measure the efficiency of contour farming as compared with the conventional or up-and down-hill method.

Dams

Berry,C.F. Redeeming Shasta's waters. Amer.Forests 46(9):396-399, 424, illus. Sept.1940. 99.8 F762

Cost, scope and benefits expected from Shasta dam.

"All in all, it looks as though when the huge project is finally completed everybody will have what they want. The farmers along the Sacramento River will have protection from drought and floods; the fishermen will have their fish; the hunters will have their game; and all will have the forests. There is more to building a dam than meets the eye."

Botts,C.A. Recreational use of forest waters. Engin.News-Rec.125(9): 297-299, illus. Aug.29,1940. 290.8 En34

Describes earthfill, masonry, concrete arch and timber dams designed to improve the recreational advantages of forest lands.

Floyd,O.N. Modern construction methods on earth dams - Part I. Relative economy of hydraulic and rolled fill; Pickwick Landing Dam illustrates use of two types in conjunction. - Part II. Sardis and Wappapello Dams exemplify new developments in hydraulic and rolled-fill work. Civ. Engin.10(8):487-490, illus. Aug.1940; 10(9):586-589, illus. Sept. 1940. 290.8 C49

Miller,C.W. Diversion dam,dikes, insure crops. Mont.Farmer 27(22[i.e. 18]):5,31, illus. May 15,1940. 6 M764

Neff,D.R. Development and maintenance of a navigable channel in the Missouri river. Civ.Engin.10(9):578-581, illus. Sept.1940. 290.8 C49

"An abridgement of paper before the Waterways Division at the 1940 Spring Meeting.[ASCE] Of particular interest is the account of cutoff construction, the trend toward lighter structures, and the development of asphalt revetment and rock and earth-fill chute closure dams."

Evaporation

Evaporation at Charleston,S.C. Pub.Works 71(1):1,14. Jan.1940. 290.8 M922

"34 yr.record kept of evapn.from water surface of Goose Creek storage basin of Charleston(S.C.)Water Dept. Ave.annual evapn.from water is 48.35" and from land 81.08". Max.from water 65.57" and min. 34.23". From land,max.110.63", and min.59.03". Evapn.from water detd.from vessel,approx. 6" diam., suspended in second vessel about 2' in diam.,immersed and floated in res.off shore; loss detd.daily. Ave.evapn.from water for 12 mo. of yr.given respectively:2.32", 2.62", 3.91, 4.84", 5.59", 5.49", 5.27", 4.93", 4.35", 4.01", 2.80", 2.22"."- Martin E.Fluentje. Abs. Amer.Waterworks Assoc.Jour.32(6):1053. June 1940.

Fish Ponds

Swingle, H.S. and Smith, E.V. Management of farm fish ponds. Attention to proper stocking and fertilization pays dividends. N.C. Wildlife Conserv. 4(6):16-18, illus. June 1940. 279.8 N812

Also issued under same title by Alabama Agricultural Experiment Station. 100 All

Floods and Flood Control

Flood control threatens salmon industry. Outdoor Amer. 5(6):2. Apr. 1940. 410 Izl

Includes resolution presented at convention of Izaak Walton League "reiterating its conviction that biological values must be given consideration before flood control and other water projects are approved".

Flood flows in Italian rivers. Ann. dei Lavori Pub. (Rome) 77(10):1080. Oct. 1939. 290.9 Itl

"Data for 352 peak flood flows are given, and include: name of river; location of measuring point; date; area of catchment; its percentage permeability; its mean altitude; elevation of zero altitude above sea level; and peak flow expressed as cubic meters per second, and as liters per sec. per sq. km. of catchment. When for each hydrographic diversion of country the areas, S, of catchment are plotted as abscissas against corresponding maximum flood flows, q, per sq. km. points obtained seem to lie upon curve:

$$q = q_{100} \frac{S}{100}^{-n}$$

where q_{100} and n are constants for any particular region, but vary for different regions. *(c.f. formulas for Fanning, Ryves, and Dikens.)* Value of n depends upon permeability; varies from 0.7 for impermeable, to 0.5 for permeable extremes. Value of q_{100} may exceed 12 on most impermeable watersheds of at least 100 sq. km. in area; while in some impermeable watersheds it may even be lower than 5. For permeable watersheds, spread in values of q_{100} is from a range of 6 to 9 in a few important watersheds down to under 3 for the ordinary. In case of permeable watershed, some of precipitations may finally emerge elsewhere, permanently alienated. As examples of exceptional floods, certain small catchment areas in Liguria, Romagna, and Sardinia record flows of from 33 to 35 cu.m. per sec. per sq. km. - Frank Hannan." Abs. Amer. Waterworks Assoc. Jour. 32(6):1060. June 1940.

Miliani, L. Floods and flood control in the Venetian rivers. Ann. dei Lavori Pub. 77(10):1076. Oct. 1939. 290.9 Itl

"3 chief rivers, which now empty into Adriatic through common mouth a few km. north of mouth of Adige, are Agno Guà, or Frassine, Bacchiglione, and Brenta, take their rise among Alps to north and pursue turbulent courses southward through very fertile plain which centers around ancient city of Padua which is encircled by Bacchiglione. Authenticated history of disastrous floods remedial measures proposed and of those carried into effect extends back about 500 yr. Problem has engaged attention of many of Italy's most distinguished engineers. This volume is second of a series, first of which was devoted to Adige. Author is

present head of Italian Water Authority."(Pub.of Italian Comm.for Study of Public Calamities,Royal Acad.of Lincei,Vol.VIII,(1939)) - Frank Hannan. Abs.Amer.Waterworks Assoc.Jour.32(6):1060. June 1940.

Grass Waterways

Keilholz,F.J. Grass waterways. Country Gent.110(9):66. Sept. 1940. 6 C833
Suggests method for establishment in Illinois.

Grasses and Grassland

Allred,B.W. Crested wheatgrass in competition with the native grass-land dominants of the Northern Great Plains. U.S.Soil Conserv.Soil Conserv.6(3):59-63,illus. Sept.1940. 1.6 So3S
"Bibliography,"p.63.

Howard,I.M. Grass.Its carrying capacity is being doubled by simple methods of field culture. Successful Farming 38(8):10,32-33,illus. Aug.1940. 6 Sul2

Kikuyu grass. U.S.Soil Conserv.Serv.Soil Conserv.6(3):82,illus. Sept.1940. 1.6 So3S

Pevehouse,H.M. Possibilities of Johnson grass in northwest Texas. U.S.Soil Conserv.Serv.Soil Conserv.6(3):68-70,77,illus. Sept. 1940. 1.6 So3S

"This article describes the growth and utilization of the grass in the area centering around Dallam and Hartley Counties,Tex. Here there is an urgent need for a perennial cultivated or semicultivated plant which combines the advantage of being a good soil binder with that of having satisfactory economic possibilities.Johnson grass seems the nearest approach to such a plant yet found."

Pladeck,M.M. The testing of buffalo grass "seed", Buchloe dactyloides engelm. Amer.Soc.Agron.Jour.32(7):486-494,illus. July 1940. 4 Am34P
"Literature cited,"p.494.

Highway Erosion Control

Ingells,G.D. Control of mountain roads:A discussion of the causes of erosion and washouts in mountain roads and an explanation of the practical methods to remedy this condition(El control de los caminos de montaña). Ingenieria Internatl.58(6):32,52,54. June 1940.
In Italian.

Maher,Colin. Roads and their relationships to soil conservation. East African Agr.Jour.5(6):425-434,illus. May 1940. 24 Ea74
Suggests improvements in road building in Kenya based on observations made in the U.S. Several references are made to highway erosion control work of the S.C.S.

Hydraulics and Hydrology

McClean,W.N. Windermere basin:rainfall,run-off and storage. Roy. Met.Soc.[London]Quart.Jour.66(286):337-362,illus. July 1940. 340.9 R81 I.Characteristics of the area and scheme of hydrological stations; II.Rainfall at the gauges and methods of assessing general rainfall on the area;III.The run-off and storage of Windermere basin;IV.Three examples of analyses of the records.

Riesbol,H.S. Techniques of hydrologic research. Agr.Engin.21(7): 269-273,illus. July 1940. 58.8 Ag83 "References,"p.273.

"A critical review of the techniques utilized in hydrologic research leads to certain specific conclusions and suggestions:(1)The methods for measuring the activity of the hydrologic process on an areal basis have not advanced to an equal degree of ability for all processes. Rainfall and runoff, for example,can be measured much more accurately over a large area than can soil moisture or transpiration.(2)In many cases the techniques now available do not provide for tracing the dynamic activities of any process throughout its occurrence or for correlating such activities with the biotic influences of soils and cover.(3)Many workers are now engaged in developing methods and procedures which will eventually overcome the shortcomings mentioned in(1)and(2).It is the hope of every hydrologist that such development will lead as rapidly as possible to additional techniques which will permit the complete quantitative analysis and establishment of basic theoretical relationships between all the process of hydrology on a watershed or other areal basis."

Stafford,H.M. The Pecos River joint investigation.Comprehensive Governmental survey and analysis of the basin's water resources and problems now under way. Civ.Engin.10(8):516-519,illus. Aug.1940. 290.8 C49 "The work,here described,includes studies of runoff,consumptive use of water,control of floods,erosion,silting, and salinity."

Irrigation and Drainage

Bartels,L.C. Grading land for irrigation. Victoria Dept.Agr.Jour. 38(4):157-164. Apr.1940. 23 V66J A practical illustrated account.

Brown,F.E. Heavy irrigation is a waste of water. Through the Leaves 28(4):122-126,illus. July 1940. 66.8 T41

"From experiments conducted by Leslie Bowen at the experiment station at Scottsbluff,Nebraska,it was found that sugar beets secured 80 per cent of the total water used from the upper two feet of soil;potatoes used 81%;oats used 80% and alfalfa used 61% of the total water used from the upper two feet of soil."

Buie,E.C. Water conservation in an irrigation system. U.S.Soil Conserv.Serv.Soil Conserv.6(3):74-75,illus. Sept.1940. 1.6 So3S Seepage loss in the distribution system of the Buckeye Lateral Ditch Association was 45 percent of the total water received in 1937.Through

the assistance of a Soil Conservation Service C.C.C. Camp, located near Wellington, Colorado, stabilization of $2\frac{1}{2}$ miles of the main ditch reduced the seepage loss to approximately 14 percent.

Carter, Keith. Pump provides way to live. Nebr. Farmer 82(17):3,16, illus. Aug. 24, 1940. 6 N27

"Ed. Note: This is the first of a series of two articles describing the operations of Fillmore county [Nebr.] farmers who are using irrigation pumps. The second article will appear in our next issue."

Costello, G.R. Irrigation history and resettlement of Milk River project. U.S. Bur. Reclam. Reclam. Era 30(8):231-233, illus. Aug. 1940. 156.84 R24

"Continued from June issue."

Deering, Fannie. Water is where you find it. Farmer-Stockman 53(15): 374, illus. Aug. 1, 1940. 6 Ok45

"In Hale and Swisher counties [Texas] and parts of Floyd and Brisco, there has been a definite swing toward irrigation the last four years, with hundreds of wells now in operation."

Furr, J.R. Some principles of lemon tree irrigation. Calif. Citrog. 25(9):278, 292, illus. July 1940. 80 Cl25
Report of discussion at Lemon Men's Club.

Haswell, J.R. Principles of tile drainage. Agr. Engin. 21(8):310, 316, illus. Aug. 1940. 58.8 Ag83
"Bibliography," p. 316.

Kearney, M.L. Short runs save water. Capper's Farmer 51(8):7. Aug. 1940. 6 M693

"Ways to conserve irrigation water must be devised, first, because nearly all districts are developed beyond their resources and, second, because recurrent droughts in sheds frequently reduce supplies below normal. In an effort to determine a technique which will make best use of a minimum of water, H.E. Gravas, Morgan county, Colorado, conducted a test on his place in cooperation with F.E. Brown, irrigation engineer for Colorado Agricultural College.

"What they learned was that an acre foot could be saved over customary methods. And not only did the rationing not reduce yields but actually increased them."

Lane, E.W., Cheng, T.T., and Pien, C.L. Water requirements of rice irrigation. Assoc. Chin. & Amer. Engin. Jour. 20(6):233-252. Nov./Dec. 1939. L.C.

Bibliography

Collection of available information on water required by growing rice; analysis of observed data and development of method of determining water requirements of rice; empirical formula for estimation of net duty of water for rice.

The study was undertaken at the University of Iowa as a subject for a Master's thesis in Hydraulic Engineering.

Maxson,A.C. New approach to irrigation. Through the Leaves 28(3): 105-107. May 1940. 66.8 T41

Preliminary study,Moisture equivalent and wilting coefficient for soil of 175 fields in Colorado determined.

Powers,W.L. Thirty years of supplemental irrigation studies. Agr. Engin.21(8):311-312,illus. Aug.1940. 58.8 Ag83

Simms,D.H. The "Eye of the Giant". N.Mex.18(8):20,42-43,illus. Aug.1940. 288.8 N46

Plans for restoring irrigation of farm land near Manzano, New Mexico as a part of the U.S.D.A.water facilities program.

Taylor,C.A. Transportation of soil in irrigation furrows. Agr.Engin. 21(8):307-309,illus. Aug.1940.. 58.8 Ag83

Whitney,D.J. Efficient cotton and alfalfa irrigation. Calif.Cult. 87(16):433-445. Aug.10,1940. 6 C12

Land Management and Utilization

A decade of land use in Montana. Mont.Farmer 27(13):5,31,illus. Mar.1,1940. 6 M764

Johnson,R.W. Land use in the bluegrass basins[of Tennessee and Kentucky.] Econ.Geog.16(3):315-335,illus. July 1940. 278.8 Ec7

Laird,D.G. Differentiation of forest and agricultural lands. Sci.Agr. 20(5):291-296,illus. Jan.1940. 7 Sci2
"References,"p.296.

The writer suggests consideration of the influence of forest growth on moisture movement and soil moisture supply,as a factor in determining effective land use.

Miles,H.A. Land-use planning in Oklahoma. Okla.Agr.Expt.Sta.Current Farm Econ.Ser.49, 13(3):67-70. June 1940. 100 Ok4

Spalding C.J. 34 owners and Mr.Henninger. U.S.Bur.Agr.Econ.Land Policy Rev.3(3):26-28. May-June 1940. 1 Ec7La

Shows effectiveness of land adjustment program by analyzing a representative unit,that operated by J.A.Henninger near Roundup,Mont.

Torkelson,M.W. Conservation and land use. Wis.Conserv.Bul.5(7):3-8, illus. July 1940. 279.8 W752

"...To bring about a conservation-minded land use,three Ps are needed:Planning,to devise the ways and means;Persuasion,to induce the people most intimately concerned to accept the plans;and Performance, which is carrying out the plans."

Wahlberg,H.E. Land use survey progressing Orange County[California]. Calif.Cult.87(17):459. Aug.24,1940. 6 C12

"The land use survey now under way is significant that it is prepared by farmers intimately familiar with the situation in their own communities...[It will give]"factual information for each area in the county,covering soil types,farming practices,trend of production,irrigation and water facilities available,land capability and other local factors that influence the farm production,farm management and farm returns."

White, G.F. State regulation of flood-plain use. Jour. Land and Pub. Util. Econ. 16(3):352-357. Aug. 1940. 282.8 J82

Channel-capacity and land-use regulations; status of state regulations; county and municipal regulations; obstacles to state regulation; needed action.

Legumes

Austin, W.W. Strawberry clover in the Northern Great Plains. U.S. Soil Conserv. Serv. Soil Conserv. 6(2):35-37, illus. Aug. 1940. 1.6 So3S

"It appears that strawberry clover is unsurpassed for wet boggy pastures... Certainly this clover shows promise of filling a long-felt need for a wet pasture legume in the irrigated section of the Great Plains and, by utilizing these wet areas for pasturage, a better system of farming is possible for the entire farm."

Dail, H.M. Lespedeza takes over. King Corn's rule in Missouri is broken forever by a humble legume now growing on three-fourths of the farms in that state. Successful Farming 38(9):20, 41-42, illus. Sept. 1940. 6 Sul2

Lysimeters

Domolon, A. Information obtained from continuous observations with lysimeters. (Enseignements tirés d'observations continues en cases lysimétriques) Acad. d'Agr. de France. Compt. Rendt. 26(14):487-492. May 8, 1940. 14 P215 Bc

"Lysimeter tests show that under the climatic conditions of France only about one-third of the rainfall passes through the soil. Water is a limiting factor in crop yields. On bare soils the av. annual removal of CaO and MgO amounts to 543 kg. per hectare which represents 1.49% of the exchangeable reserve. The MgO and CaO losses are approx. equiv. The annual loss of CaO on unfertilized cultivated soils is 25% less than on bare soils. Vegetation thus retards decalcification and acidification of the soil. With K₂O a large part of the annual loss is due to the crops. Impoverishment of the soil is very rapid. In bare soil regeneration of assimilable K₂O is slow." J.R. Adams. Abs. Chem. Abs. 34(17):5986. Sept. 10, 1940.

Joffe, J.S. Lysimeter studies: IV. Movement of anions through the profile of a gray-brown podzolic soil. Soil Sci. 50(1):57-63, illus. July 1940. 56.8 So3

"References," p. 63

Michel's Grass

Dakin, Edward. Michel's grass measures up. Calif. Cult. 87(14):408-409. July 13, 1940. 6 Cl2

Describes a newly introduced grass which has erosion control potentialities. Dr. V.A. Young, University of Idaho range management specialist, "found that his screening seeds found a ready foothold on the burned, steep sides of a ravine and produced abundant ground-

Dakin, Edward. Michels grass on the range. Ability of new hybrid to thrive under most adverse conditions appeals. Amer. Hereford Jour. 31(4):172-183, illus. June 15, 1940. 43.8 Am32

Report on grass tests. U.S. Dept. Agr. Off. Inform. Daily Digest 78(43):2. Aug. 29, 1940. 1.9 Ag81

"Advertised claims that Michels' grass, now being sold throughout the country, is a cross between Mosida wheat and Giant wild rye grass, and that the so-called cross is a true perennial, are not supported by two years of tests at several Experiment Stations, report officials of the Bureau of Plant Industry. On the basis of the studies, the Bureau officials say that neither the seeds of Michels' grass nor the plants when growing in the field can be distinguished from rye.

"Chromosome counts of the pollen mother cells of the two supposed parents and the supposed hybrid show that it cannot be of the claimed parentage, say the officials. Mosida wheat has 21 such hereditary bodies or chromosomes and Giant wild rye has 14 chromosomes. On the other hand, common rye, and wild perennial rye from Asia, like Michels' grass, have seven chromosomes. These facts, together with the fact that Michels' Grass has no resemblance to either of the supposed parents, wheat or Giant wild rye grass make it necessary for the Bureau to consider Michels' grass as a variety of rye."

Entire item quoted.

Percolation

Engelhardt, J.H. Researches on the percolation of water into soil, and towards a method for the determination of the water-capacity of soil. (Een onderzoek naar de afzaaking van water in de grond en naar een methode ter bepaling van de watercapaciteit van de grond). Landbouwk. Tijdschr. 52(636):233-268. Apr. 1940. 105.2 Or3

In Dutch.

A detailed consideration with numerous diagrams, tables and equations.

Prairie Forestry

Selke, A.C. Prairie forestry from a prairie dweller's viewpoint. Jour. Forestry 38(7):545-546. July 1940. 99.8 F768

The writer believes that "the question of fostering tree growth on the grasslands of the West resolves itself into two great problems. First, can the arboreal growth of the dry regions be conserved and extended, and second, what justification is there for conserving or extending the forest areas of the Great Plains or Prairies?"

Precipitation

Miles, J.R. Advantages of the nonuniform hour of observation in the interpretation of published precipitation data. U.S. Monthly Weather Rev. 68(4):99-100, illus. Apr. 1940. 1 W37M

Tryon, H.H. and Finn, R.F. A compact precipitation record. Jour. Forestry 38(8):644-645, illus. Aug. 1940. 99.8 F768

The authors describe a convenient method of recording precipitation data.

Rain Machines

Russia uses rain machines. U.S. Dept. Agr., Off. of Inform. Daily Digest 78(39):3. Aug. 23, 1940. 1.9 Ag81

"The Moscow Institute of Hydraulics and Reclamation has designed three rain machines, says a story from Moscow in Idaho Sunday Statesman, August 18. One - for irrigation of all crops - consists of light metal tubes mounted on a caterpillar Diesel tractor. Another is a 'short-stream rain installation,' for use on small farms, while a third - for irrigation of large kitchen gardens and fields - is known as 'long-stream installation.' It consists of a pump mounted on a tractor, a light portable pipeline with specially designed joints and a 'rain apparatus'. The use of the machines is said to have increased yields of spring wheat in the Saratov region by more than three times the yields from unirrigated fields."

Entire article quoted.

Range and Pasture Management

Calkins, H.G., and Hubbell, D.S. A range conservation demonstration in the land of the Navajos. U.S. Soil Conserv. Serv. Soil Conserv. 6(3): 64-67, illus. Sept. 1940. 1.6 So3S

Outlines research and demonstration over a 7 year period at the Navajo experiment station, Mexican Springs, New Mexico.

Statistical tables illustrate the effect on yield and return of proper management of cattle and sheep.

Nielson, A.B. Management - a cure for overgrazed range. Amer. Soc. Agron. Jour. 32(8):602-606. Aug. 1940. 4 Am34P

"Literature cited," p. 606.

"Range studies were made to determine the relative rate of recovery of key species, namely, bluebunch wheatgrass (Agropyron spicatum) and Idaho fescue (Festuca idahoensis), under proper management and protection as a basis for recommendations and adjustments in range management plans. Plots were located in pastures which were owned by local ranchers. Neighboring farmers and stockmen have had an opportunity for regular observation.

"The following conclusions were reached as a result of the plot studies:

1. Bluebunch wheatgrass starts growth 10 days to two weeks earlier on pastures moderately used than on those overgrazed the previous spring.

2. Improper management not only reduces the yield of the better forage but also exposes the soil to serious erosion.

3. Studies of the virgin bunchgrass range revealed an estimated carrying capacity per 100 surface acres of 96 animal unit months. Estimated carrying capacity was 70 animal unit months on moderately over-grazed range and only 11 animal unit months per 100 surface acres on severely overgrazed range.

4. Range properly managed under a deferred and rotation system of grazing increased 43% in forage density and 112% in carrying capacity in two years.

5. Bluebunch wheatgrass severely overgrazed previous to protection increased approximately 19 times in forage yield under two years.

protection from grazing.

6. One-year's protection brought an increase of 3.44 times in forage yield of the bunchgrass the following season."

Parker, K.W. and McGinnies, W.G. Seeding southwest ranges. Revegetation in vast area depends on observance of simple rules and practices. Amer. Hereford Jour. 31(6):23. July 15, 1940. 43.8 Am32

Smith, C.C. The effect of overgrazing and erosion upon the biota of the mixed-grass prairie of Oklahoma. Ecology 21(3):381-397, illus. July 1940. 410 Ec7

"Literature cited," p. 397.

Includes a proposed grazing plan for central Oklahoma.

Root Studies

Dittmer, H.J. A quantitative study of the roots and root hairs of a winter rye plant (*Secale cereale*). Amer. Jour. Bot. 24(7):417-420, illus. July 1937. 450 Am36

"Literature cited," p. 420

"This paper gives the figures for the root and root hair systems of a single cereal plant, *Secale cereale* L. Of several grasses studied in a preliminary way - namely, *Andropogon furcatus* Muhl., *Sorgastrum nutans* (L.) Nash., *Poa pratensis* L., and *Triticum sativum* L. - winter rye was selected because it has been used successfully in retarding erosion and also because of its importance as a grain and forage crop."

Dittmer, H.J. A quantitative study of the subterranean members of soybean. U.S. Soil Conserv. Serv. Soil Conserv. 6(2):33-34, illus. Aug. 1940. 1.6 So3S

Table 1 gives statistical data for the subterranean members of soybeans.

Table 2 presents in summary the quantitative data of the subterranean members of the roots and root hairs of three grasses (Kentucky bluegrass, oats, and winter rye) in comparison with soybean.

"This study shows why Kentucky bluegrass is superior to the other plants and why soybean is a very poor plant to be grown on fields subject to erosion. It shows also that the soil-binding potentialities of a plant may be determined in a very short time by making quantitative studies of its roots and root hairs."

Dittmer, H.J. A quantitative study of the subterranean members of three field grasses. Amer. Jour. Bot. 25(9):654-657, illus. Nov. 1938. 450 Am36

"Literature cited," p. 657.

The writer has, in a previous paper, drawn attention to the significant role that a fibrous root system must play in soil physics and in soil binding. The present paper gives the results of a comparative study of roots and root hairs for oats, winter rye and Kentucky bluegrass.

"From a practical viewpoint these measurements suggest that oats would be least efficient of the three grasses, winter rye intermediate, and Kentucky bluegrass far superior to either of the others in soil binding possibilities."

Farrant, N.A., jr. and Sprague, H.B. Effect of treating different horizons of sassafras loam on root development of red clover. Soil Sci. 50(2):141-161, illus. Aug. 1940. 56.8 So3

"References," pp. 160-161.

Summary: "The root system of red clover was studied after growing in Sassafras loam with various cultural and fertilizer treatments, in order to determine the limiting factor or factors of root development in New Jersey.

"The root systems of all red clover plants examined were less extensive than those reported in the western and midwestern states.

"The chemical and physical properties of the soil studied, namely, soil acidity, texture, pore space and nutrient supply, apparently had little influence on root penetration.

"The plots in which occurred the deepest penetration and occupation of the B horizon by roots were those tilled in the A₂ horizon without other treatment.

"Those plots which received combinations of lime, manure, and fertilizer had an extensive root development in the A_p horizon, a much more limited one in the A₂ horizon, and almost none in the B horizon.

"This study indicates that some factor or factors in the A₂ horizon of certain New Jersey soils is corrected by tilling, and that this permits roots of red clover to pass through this horizon and develop extensively in the B horizon. Additional investigation is needed to find the underlying causes for this response to tillage."

Sedimentation and Silt

Hall, L.S. Silting of reservoirs. Amer. Waterworks Assoc. Jour. 32(1): 25-42, illus. Jan. 1940. 292.9 Am32J

"References," p. 42.

This paper is divided in two parts: first, a description of the results of measurements of silt deposits in various reservoirs owned by the East Bay Municipal Utility District with comparison of rate of silting in other reservoirs; and second, an outline of the proposed methods of controlling the rate of erosion on the District's watersheds.

Lane, E.W. Notes on limit of sediment concentration. Jour. Sedimentary Petrology 10(2):95-96. Aug. 1940. 398.8 JE2

"References," p. 96

Table gives high sediment concentration of some streams.

Snow Surveys

Parshall, R.L. How snow surveys are made. Through the Leaves 28(3): 87-88. May 1940. 66.8 T41

Soil Conservation

Anderson, T.C. Saving soil and water. "Democracy in Land use." An analysis of Soil Conservation Service activities. Mont. Farmer 27(22): 5, 23, illus. July 15, 1940. 6 M764

"This article deals first with the federal legislation enacted to

insure proper land use, and later with the Montana state soil conservation districts law, in an attempt to clarify to the readers the various means whereby Montana land occupiers can most efficiently utilize the federal facilities available, through the organization of state soil conservation districts, or equivalent local organizations, in initiating proper land use practices for the purpose of conserving both human and natural resources."

Bennett, H.H. Tzintzuntzan to Singapore. U.S. Soil Conserv. Serv. Soil Conserv. 6(3):53-57, 67, illus. Sept. 1940. 1.6 So3S

A comparative picture of the drifting sands, eroding fields and orchards cultivated up and down so many of Michigan's slopes; and the gullies of Tzintzuntzan and benched slopes south of Mexico City.

The point is made that while Mexico has lost much of its heritage of productive soils, Michigan, with cooperative efforts of farmers and specialists is controlling erosion and "going steadily forward toward our goal of security for the land, the people and the Nation itself!"

Collier, G.W.... Size of farm and the soil conservation program. U.S. Soil Conserv. Serv. Soil Conserv. 6(3):71-73, 77. Sept. 1940. 1.6 So3S

Hays, M.E. and Hamorly, D.D. Conservation to improve tenure. U.S. Bur. Agr. Econ. Land Policy Rev. 3(4):22-23. July-Aug. 1940. 1 Ec7Ia

A group of tenant farmers in Iowa, through a manure spreader cooperative, have found soil building not only possible and advantageous, but also a strong argument with their landlords to give them more secure tenure on their farms.

Henderson, B.L. Relation of phosphorus to soil conservation. Farm and Ranch 59(3):4. Mar. 1940. 6 T31

Hubbell, D.S. Livestock demonstration at Navajo experiment station. Ariz. Stockman 5(47):12-13, 18, illus. July 1940. 49 Ar4

"The Navajo Experiment Station, at Mexican Springs, New Mexico, in July, 1939, passed the sixth year of its research, experimental and demonstrational soil conservation program.

"A pioneer testing ground in the earliest days of the organized soil erosion control movement, the station has been the scene of a wide variety of research projects as well as of a significant livestock, range management and farming demonstration program.

"Grazing and livestock management is easily the dominant industry, and therefore the dominant land use problem of the Navajo Reservation and of the Southwest. The station's demonstration of the beneficial physical and economic effects of proper grazing and management practices together with livestock improvement is, therefore, important to the Navajo Reservation livestock program and to Service Planning and operation in Region B.

"The research program, of even greater significance in the long run, is still in the midst of studies which will require more time for completion."

Investing in a better living from the soil. U.S.Agr Adjustment Admin. Consumers' Guide 6(17):12-15, illus. June 1940. 1.94 Ad422C

"Farmer Gray's budget book shows how the Government and he are working together to build a more secure and adequate living from the earth."

Johnson, Lamont. Utah sets the pace for conservation. West. Farm Life 42(15):3, illus. Aug. 1, 1940. 6 R153

"Organization of new soil conservation districts the last few months, and still others pending, places Utah on the top in the Rocky Mountain and Pacific Coast states for this type of farm and range improvements, regional SCS headquarters at Albuquerque, New Mexico, report in an outline of accomplishments..."

"Utah has the two largest soil conservation districts in the country..."

"The Price river district in Carbon county has placed restrictions on cutting Christmas trees. This will help prevent destruction of watersheds by indiscriminate slashing of the woods..."

"Carbon and Duchesne counties have also offered to help make adjustments in tax assessments on grazing lands, and to cooperate with the state fish and game department in planting beaver in the headwaters of certain streams. It is believed the animals' natural activity will prove valuable in gully control and moisture conservation. The state game department furnished 21 beavers last spring..."

A system of cabled tree protection has been started along the Virgin river where stream bank erosion has caused much damage in Washington county.

"In the Blanding area...planting odd corners to windbreaks, shelterbelts and woodlots with farm forestry trees, fencing of designated ranges to prevent overgrazing structures to halt wind-blowning of light soils, eradication of noxious weeds, fire prevention and revetment work along canals and washes are projects being advanced in a general program toward restoring non-profitable farms."

Mosher, M.L. Beef cattle in soil conservation. Lists "Five Ideas," based on 25 years of intensive study of farm records. Cattlemen 27(3):42. Aug. 1940. 49 C29

"Address by Professor of Farm Management Extension Work, University of Illinois, before the Illinois Cattle Feeders' Meeting, April 26, 1940."

Mosher, M.L. The importance of beef cattle in soil conservation. U.S. Soil Conserv. Serv. Upper Miss. Reg. Prog. Exch. Tech. Sup., June 17, 1940, pp. 1-6. 1.9604 P941

Talk given on Beef Cattle Feeders' Day at University of Illinois, April 26, 1940.

Obituary notice. Imp. Bur. Soil Sci. Soils and Fert. 3(4):147-148. 1940. 241 Im7Sf

"Pedology is dead...Its death knell has been rung before the present war broke out...In the United States and other countries of the New World it failed to help in solving the pressing problems of soil conservation. Had the projected union with Ecology been consummated

Pedology might have survived, but alone it proved unequal to the demands made upon it"...

The seventh Fortune round table. Agricultural policy and national welfare. Fortune 22(1):68-69, 83-84, 86, 88, illus. July 1940. 110 F772

"This Round Table divided sharply upon the merits of the present agricultural program, namely the efforts of the AAA to advance soil conservation and achieve 'parity'. These differences are stated fully in the text. Nevertheless the Round Table as a whole, with one or two exceptions, noted, unanimously agreed to the following:Soil conservation. This must be a public responsibility; the work of the Soil Conservation Service is sound and should be extended; farm woodlots should be exempted from local taxation; greater emphasis should be placed by the AAA on soil-improvement practices and stricter compliance with its program if the work is extended"...

Smith, R.C. A need for work, a need for workers. U.S. Bur. Agr. Econ. Land Policy Rev. 3(3):1-9, illus. May-June 1940. 1 Ec71a

Indicates how a rural conservation works program would work, its need, its cost and some definite possibilities of benefit.

A chart gives estimated number of man days of labor required for needed soil, water and forest conservation work.

Stewart, G.R. Conservation in Pueblo agriculture. I. Primitive practices. Sci. Monthly 51(3):201-220, illus. Sept. 1940. 470 Sci23

Watkins, W.F. Toward a conservation balance. U.S. Bur. Agr. Econ. Land Policy Rev. 3(3):10-19, illus. May-June 1940. 1 Ec71a

The writer explores a "neglected section of the field" of soil conservation, namely, that "concerned with attempting to confine the desired conservation balance, to set specific goals in terms of practices and cropping systems, and to measure the progress that our research education and action programs are actually achieving in moving toward the desired goal."

Includes tables as follows: "Analysis of land suitable for cultivation," p. 13; "Table 1.-Progress in adjusting acreages of principal soil-depleting crops," p. 16; "Table 2.-Some soil conservation accomplishments, 1928-32, 1937, and 1938."

Welch, C.H., jr. Effect of cropland topography on labor use under a soil conservation program. Minn. Univ. Agr. Ext. Div. Farm Business Notes no. 209, pp. 2-3, May 1940. 275.29 M663

Table 1."Percentage distribution of change in field labor between soil conserving and previous farming methods, farms grouped by topography of cropland."

Wodehouse, R.P. Hold that sneeze! Rotarian 57(1):43-44, illus. July 1940.

There is a cure for the ragweed evil, hay-fever. It is soil conservation.

Wolfe, Emerson. A coordinated conservation program for the McGregor, Iowa, watershed. U.S. Soil Conserv. Serv., Upper Miss. Reg. Prog. Exch. Tech. Sup., Apr. 5, 1940, pp. 1-9, illus. 1.9604 P941
"Speech given before Iowa Engineering Society, Ames, Iowa, March 1, 1940."

Soil Conservation Districts

Marshall, V.C. Pre-election activities in a soil conservation district program. Farm and Ranch 59(4):15. Apr. 1940. 6 T31
Written by an administrative officer, Texas state soil conservation board.

Soil-Cover Index

Osborn, Ben. A photographic transect for determining soil-cover index of vegetation. Ecology 21(3):416-419, illus. July 1940. 410 Ec7
"The method [described] is an adaptation of the tristat or photographic quadrat. It consists of inserting a white ruler between the cover and the soil and photographing it from such a distance that the figures on the ruler (or those portions which show through the vegetation) can be read on the prints. It is then possible to calculate on each print the percentage of the ruler which is obscured by the cover and to use this value to express the degree of protection afforded the soil."

Soil Erosion and Control

Day, G.M. Topsoil changes in coniferous plantations. Jour. Forestry 38(8):646-648, illus. Aug. 1940. 99.8 F768
"Literature cited," p. 648.

"The establishment of forestry plantations has been advocated and practised as a remedy for soil erosion on abandoned farm lands. Opinions have been advanced concerning the ability of plantations to alter the soil of the planted site, but the literature contains very little information based on actual observation of experiment. Moreover, it should be remembered that any observation is valuable only for the same local climate and for the same soil type, humus type, and forest type in which it was made."

Condensed from a Master's thesis submitted to the New York State College of Forestry, May 1939.

Lost: 18 farms a day. Farmer-Stockman 53(16):396. Aug. 15, 1940. 6 Ok45
Editorial attributing to soil erosion the cause for the loss of 33,274 farms in Oklahoma during a span of five years.

Manure checks erosion, boosts yields. Farmer-Stockman 53(14):350.
July 15, 1940. 6 Ok45

Martin, J.P. and Waksman, S.A. Influence of micro-organisms on soil aggregation and erosion. Soil Sci. 50(1):29-47, illus. July 1940. 56.8 So3
"References," pp. 46-47.
"The results of investigations on the role of microorganisms in

bringing about soil aggregation have been reported. This was shown to have an important bearing upon the problem of soil erosion.

"Two artificial soils - sand-bentonite and sand-clay mixtures - and two natural soils - Bermudian clay loam and Collington sandy loam - were used. To these were added various carbohydrates and plant residues. Pure and mixed cultures of microorganisms were used as inoculants. After incubation, two methods, designated as the pipette and slope methods, were used for measuring the binding effect of the activity of the microorganisms upon the finer soil particles.

"The action of microorganisms was found to result in a marked binding and aggregation of the soil particles; the extent of the binding depended on the organisms concerned and the nature of the organic material added.

"The results of the addition of several types of organic matter on certain physical properties of a natural soil were also reported. It was found that the effect of these materials depended entirely on their nature and the rapidity of their decomposition. The more rapidly a plant material decomposes, the greater will be its binding action upon the finer soil particles.

The effect of lime in bringing about an aggregation of the soil constituents appears to be associated largely with its effect upon the action of the organic materials.

Plow throws dirt up-hill. Mo. Ruralist 81(12):19, illus. June 8, 1940. 6 R8891

"This new 2-way plow makes it possible to always throw dirt uphill, thus reducing losses from erosion and making contour farming easier."

Visher, S.S. Hillside soil erosion greater in southern Indiana. Farmers Guide 96(17):380-395, illus. Sept. 7, 1940. 6 In2

Soil Erosion and Control. Foreign Countries.

Aylen, D. Contour planting and terracing of orchards [in Rhodesia]. Rhodesia Agr. Jour. 37(4):196-208. Apr. 1940. 24 R34

Methods are described. In conjunction with ridging, the use of mulch - preferably leguminous - is recommended to increase the moisture-retaining capacity of the soil.

Aylen, D. Working loam soils for high yields. Rhodesia Agr. Jour. 37(5): 282-295, illus. May 1940. 24 R34

The role of soil conservation.

Brako, J. Erosion control. The importance of vegetative cover [in Victoria]. Victoria Dept. Agr. Jour. 38(4):173-180, illus. Apr. 1940. 23 V66J

Breadon, G.W.D. Bein river protection works, Shakargarh Tahsil. Mattress-facing of banks under erosion. Indian Forester 66(4):232-234, illus. Apr. 1940. 99.8 In2

Explains methods of use of the shrub Ipomoea carnea which is extensively employed in the Gurdaspur District on engineering works for protective purposes.

It is "pre-eminently suited for the protection of banks of rivers

and canels because of its habit of throwing out root-suckers, thus forming thick clumps of moderately thin and long stems which bend to the action of the water, preventing any damage to the bank on which it is growing."

Dawson, O.L. Philippine agriculture, a problem of adjustment... U.S. Off. Foreign Agr. Relat. Foreign Agr. 4(7):383-456, illus. July 1940. 1.9 Ec7 For

Table 3, p. 412 shows extent of eroded land and land subject to erosion, in important southwestern provinces of Luzon.

Denudation of India. Indian Forester 66(6):380-381, illus. June 1940. 99.8 In2

"The following resolution was adopted by the Central Board of Irrigation, says a report published in the Amrita Bazar Patrika, dated the 13th March, 1940, regarding the effect of deforestation and denudation on irrigation projects:

'This Board is convinced that the evils of denudation in India are so serious and widespread that action for its further prevention should be taken without further delay. Denudation causes high floods in summer and low river-levels and small supplies in winter which result in (i) damage to canal systems through interference with the regularities of canal supplies, (ii) harmful deposits of sand, (iii) interference with river navigation, and (iv) widespread damage to the countryside. Methods which have been found effective depend on the local conditions. They include: (a) better field cultivation in order to reduce erosion from plough land, (b) better live-stock management in order to reduce erosion from grazing lands, (c) afforestation of such village waste land as can be devoted to the production of timber, fuel and fodder trees, (d) the conservation of grass lands, and (e) the substitution of organised 'taungya' for shifting cultivation.'

'The Board considers that all Provincial and State Governments should be urged to develop and extend the most suitable local machinery to deal with further denudation and the above-mentioned allied problems'."

Entire article quoted.

Gerritsen, D. Conserving the topsoil by means of contour banks and terraces (Het behoud van een goede bodemkruin middels vangbermen en terrassen). Bergcultures 14(7):280-288. 1939. 22.5 B45

Article in Dutch.

"Semi-popular account of soil conservation on planted and unplanted hilly land; details of construction of banks and terraces, with special reference to slopes planted with trees." Abs. Imp. Bur. of Soil Sci. Soils and Fert. 3(3):118. 1940.

Gorrie, R.M. Soil erosion and the cultivator's responsibility [in India]. Indian Farming 1(5):230-233, illus. May 1940. 22 In283

Joubert, J. Triumph of soil conservation on a Karoo farm. Farming in So. Africa 15(171):213-215, illus. June 1940. 24 So842

Legros, J. The forage problem in the Union of South Africa. Internatl. Rev. Agr. Rome 31(5):192 T-204 T, illus. May 1940. 241 In82

"An attempt has been made to describe briefly the causes which have brought about the present condition of the grasslands of the Union of South Africa. These causes may be summed up as improper utilization of herbage, leading to the disappearance of the best forage species, their substitution by species of lesser value and the gradual extension of soil erosion and soil exhaustion. These effects became prominent after white settlement in South Africa, when livestock could no longer shift freely from one grazing area to another, according to season and water supply, but were kept in enclosed fields."

Scaetta, H. Observations on the origin and constitution of soils from French West Africa (Observations sur l'origine et la constitution des sols de l'Afrique occidentale française). Ann. Agron. [Paris] 10(1): 101-126. Jan.-Feb.-Mar. 1940. 14 An75A

"The formation of laterite is explained as the climax of a cycle of erosion that is completed relatively quickly in tropical climates. In the first phases of the cycle, intense decomposition and leaching cause the accumulation of a residue of lateritic products (sesquioxides) which, on exposure to the air at the soil surface, form a hard crust which protects the surface from erosion and the subsoil from laterization. The soil has then reached its 'climax' of evolution - a state of equilibrium and inertness. Subsequent weathering ultimately destroys the crust which is removed by erosion, exposing the formerly protected subsoil to laterization. The cycle varies with the topography, climate, vegetation, etc. Examples of soils formed under different conditions in West Africa are given to illustrate how the theory can explain the existence of different types of tropical soils." -- Imp. Bur. Soil Sci. Soils and Fert. 3(4):163-164. 1940.

Voorendyk, J.J. Sylviculture as a complement to farming. Farming in So. Africa 15(172):251-252. July 1940. 24 So842

Advocates afforestation in South Africa for its soil conserving benefits, namely, protection to water catchment areas and control of drift-sands.

Soil Fauna

Hamilton, W.J., jr. and Cook, D.B. Small mammals and the forest.. Jour. Forestry 38(6):468-473, illus. June 1940. 99.8 F768

"Literature cited," p. 473.

"The role of small mammals as agents in the control of forest insects has long been overlooked. Their insectivorous nature and large numbers make them potentially more useful than birds in this respect. Through their activity on the forest floor, where they work the litter thoroughly, these mice and shrews perform a highly useful and desirable service to the forest. In addition to destroying the larval and pupal stages of many pests, they work the soil completely, allowing for better penetration of air and water. They serve as food for valuable fur-bearers and act as buffer species for predatory birds and mammals, giving added protection to valuable game species. Certain forest practices are outlined by which these species may

be increased or the habitat made inviting for them.

"In brief, these small mammals, long considered only an unfavorable species, are an unrecognized asset in forest management."

Jacob, A.P. The fauna of the soil. Quart. Rev. Biol. 15(1):28-58.

Mar. 1940. 442.8 Q2

"List of literature," pp. 55-58.

"This fauna may be considered from two viewpoints: (1) the effect of its various members on the soil (a) in increasing channeling and therefore rain receptivity, i.e. in decreasing run-off and floods, (b) in increasing fertility and consequent more rapid growth of wood, (2) the interrelations of these animals through their feeding and breeding habits. The first is of economic value, the second is of sociologic interest."

Soil Moisture

Livingston, B.E. and Le Compte, S.B., jr. Soil-moisture fluctuation under a lawn, as indicated by absorption from porous-porcelain irrigator cones with continuous operation. Amer. Phil. Soc. Proc. 82(3):227-251, illus. Apr. 3, 1940. 500 P533

"The new device consists essentially of a water-filled porous-porcelain irrigator cone permanently buried at the depth horizon to be considered and joined by a tube to a water reservoir above ground, with a suitable mercury barostat interposed between reservoir and cone to prevent excessive hydrostatic pressure in the latter, thus giving assurance that all movement of water from reservoir through cone to soil must be due to soil suction. Whenever the soil adjacent to the cone is so wet that the suction developed at the cone surface is less than the standard back pressure of the barostat, then no water is lost from the reservoir; at other times loss is continuous, being more rapid as the surround soil becomes drier, at least till a maximal rate is attained. Rates of water loss are measured from time to time without disturbing the soil. Cones were operated at several depths in the clayloam soil of a Baltimore lawn, and avg. hourly rates for each day from Aug. 20 to Sept. 27, 1938, are presented graphically, along with corresponding records of precipitation and evaporation. When considerable rain fell the rates for the uppermost cones soon dropped to zero, somewhat later the cones at the intermediate depth ceased to show losses, while the lowermost cones were still more tardy in showing this response to the downward penetration of water. Then the cones at each depth began to lose water again, but absorption from the uppermost ones might become relatively rapid before the descending wave of excessive soil moisture had reached the lowermost ones." - Auth.abs. Abs. Biol. Abs. 14(6):9949. July 1940.

Mallik, A.K. The depth of the surface layer of the soil taking part in the diurnal exchange of moisture with the air layers near the ground. Indian Jour. Agr. Sci. 10(pt.2):164-171, illus. Apr. 1940. 22 Ag83 I

"References," p. 171.

Wilcox, J.C. Soil moisture studies. I. Some factors affecting the moisture holding capacity and its determination. Sci. Agr. 20(2): 140-149, illus. Oct. 1939. 7 Sci2
"Literature cited," pp. 148-149.

Soil Studies

Lachower, D. The movement of potassium in irrigated and fertilized red sandy clay. Jour. Agr. Sci. 30(3):498-502, illus. July 1940. 10 J822

Lewis, R.D. and Hunter, J.H. The nitrogen, organic carbon, and pH of some southeastern coastal plain soils as influenced by green-manure crops. Amer. Soc. Agron. Jour. 32(8):586-601, illus. Aug. 1940. 4 Am34P
"Literature cited," p. 601.

Experiments were made on Greenville, Norfolk and Tifton sandy loam soils.

Mitchell, J. A method for obtaining a comparative rating of Saskatchewan soils. Sci. Agr. 20(5):281-284, illus. Jan. 1940. 7 Sci2
"References," p. 284.

"A demand has arisen for a more specific type of tabulated evaluation in which there would be an actual scoring of the soil, and a comparative index given for each soil type and phase... Accordingly an index rating based upon the system used by Storie, but with some modifications in detail has been worked out. The method used is outlined."

Redlich, G.C. Determination of soil structure by microscopical investigation. Soil Sci. 50(1):3-13, illus. July 1940. 56.8 So3

Rivaz, C.P. and McLaren, G.C. Standardization of rapid soil testing technique. Sci. Agr. 20(2):120-130, illus. Oct. 1939. 7 Sci2
"References," p. 130.

Soil permeability. Cultivation to control weeds may effect rate and depth of penetration by water. Amer. Nurseryman 72(2):46-47. July 15, 1940. 80 Am371

Refers to results of demonstration studies at California Agricultural Experiment Station.

Wilde, S.A. and Patzer, W.E. The role of soil organic matter in reforestation. Amer. Soc. Agron. Jour. 32(8):551-562, illus. Aug. 1940. 4 Am34P

"The content of soil organic matter was studied in relation to reforestation practice. Investigations were confined to central and northern Wisconsin, and involved four important conifers, Pinus banksiana, P. resinosa, P. strobus, and Picea glauca. A close relationship was found between the content of organic matter and that of total nitrogen, available phosphorus and available potash in outwash and pitted outwash sandy soils derived from granitic rocks. The study of plantations showed a pronounced increase in the rate of height growth of jack pine and red pine due to a higher content of organic matter. A general tendency for the increased survival of

scedlings was observed on soils high in humus, but the correlation was not significant on the basis of the present observations.

"Because the influence of organic matter within certain limits supplements the effect of mineral colloids, both factors were given consideration, and suitable standards are suggested as a guide in the selection of planting sites."

"A technic of sampling forest soil was worked out and the Schollenberger's chromic acid titration method was adapted for use in forestry practice."

Soil Surveys

Bowser,W.E. Soil surveys in relation to land classification in Alberta. Sci.Agr.20(5):285-290, illus. Jan.1940. 7 Sci2

Milne,G. Some aspects of modern practice in soil survey. East African Agr.Jour.5(6):436-442. May 1940. 24 Ea74

"This article contains the substance of a further chapter of Mr.Milne's Report on his visit in 1938 to parts of the West Indies and the United States.

Moss,H.C. Soil surveys of Saskatchewan irrigation projects. Sci. Agr.20(3):170-174. Nov.1939. 7 Sci2

"References," p.174.

"The present study is limited to a discussion of the objectives and methods used in the surveys. It is hoped also to give some indications both of the value and of the limitations of the soil survey as applied to irrigation areas."

Strip Cropping

Jones,Ewing. Strip cropping in the land of the thoroughbreds [Bourbon county,Ky]. Soil Conserv.6(2):38,51, illus. Aug.1940. 1.6 So3S

Maher,C. Strip cropping. East African Agr.Jour.5(5):343-344. Mar.1940. 24 Ea74

A definition of the purpose of broad base terraces and strip cropping, and a consideration of the possible use of strip cropping in East Africa.

Terracing

Doering,Ferdie. Let's use the water we have. Farmer-Stockman 53(16): 407. Aug.15,1940. 6 Ok45

"In a series of experiments running over 12 crop years [the Spur substation of the Texas agricultural experiment station] has found it possible to increase the acre return on cotton as much as \$26 and an average of \$7.60 a year by using syrup-pan terraces to hold rainfall and runoff water from adjoining land on the field long enough for it to soak in.

"During the period rainfall averaged only 19.15 inches a year but the diverted runoff from 1,200 acres of pasture and fields increased the amount of water available for use in crop production by more than four inches, or 20 percent."

Economical terraces. Mo. Ruralist 81(14):9. July 6, 1940. 6 R8891

"Earl Welch, who farms the J.W. Shumard farm in Harrison county, recently proved that terracing definitely is not nearly the job it was even a short time ago. Welch's equipment for building a half-mile of terraces for a 15-acre field was a 10-20 tractor and a high-lift plow with two 14-inch bottoms. The fuel bill was \$3, and it took fewer than 12 hours to construct the terraces. The work was done by back-furrowing - the sod left in cutting the first furrow serving as a continuous brace for one wheel of the plow, preventing side-slipping. Welch believes the work could be done in a similar manner with a walking plow if the ground were wet enough."

Entire article quoted.

Flood, Francis. Community terracing outfit works and saves for [Texas] farmers. Farmer-Stockman 53(14):353, illus. July 15, 1940. 6 Ok45

Hamilton, C.L. Terrace maintenance. Agr. Engin. 21(8):317-318, 321, illus. Aug. 1940. 58.8 Ag83

Terraced fields raise bean yields in New Mexico. West. Farm Life 42(15):5, 13, illus. Aug. 1, 1940. 6 R153

Tree Planting

Petheram, H.D. The potato planter adapted for seed-spotting forest trees. U.S. Soil Conserv. Serv. Soil Conserv. 6(3):76-77, illus. Sept. 1940. 1.6 So3S

"To remedy depth variation in seed-spotting walnut hickory and similar species, the old-fashioned hand potato planter was used very advantageously in 1934 and 1935 during C.C.C. camp operations under the United States Forest Service in Cherokee County, Kans. The plantings were made on waste land that was the result of coal mining by the stripping method."

Tree Rings

Schumacher, F.X. and Day, B.B. The influence of precipitation upon the width of annual rings of certain timber trees. Ecol. Monog. 9(4): 389-429, illus. Oct. 1939. 410 Ec72
"Literature cited," p. 429.

Vegetation

Cooperrider, C.K. and Hendricks, B.A. The role of vegetation. Ariz. Stockman 5(47):14, 18. July 1940. 49 Ar4

"On August 5, 1939, a rain of cloudburst proportions occurred on the Sierra Ancha Experimental Forest watershed, which afforded an opportunity for measuring the destructive action of erosion on steep mountain slopes and the effectiveness of protective vegetation in erosion control."

Cottam, W.P. and Stewart, George. Plant succession as a result of grazing and of meadow desiccation by erosion since settlement in 1862. Jour. Forestry 38(8):613-626, illus. Aug. 1940. 99.8 F768

"Literature cited," p. 626.

This paper deals with data obtained from intermittent observations at the Mountain Meadows in southwestern Utah, over a period of ten to fifteen years and particularly during the summer and fall of 1934, when for six weeks an intensive quantitative study was conducted... Convincing evidence came out of this study that, since settlement, profound changes in the nature and distribution of vegetation have occurred.

Piemeisel, R.L. A standard experimental vegetation type. Science 92(2383):195-197. Aug. 30, 1940. 470 Sci2

"The increasing interest in land with its attendant problems of animal and plant ecology is emphasizing the long-felt need for outdoor and laboratory facilities where the interactions of land plants and animals and their physiological relations to climate can be studied. In an integrated investigation of this or a related nature, one of the essential parts would be an area sufficiently protected to permit development of the vegetation so as to form a standard and at the same time afford an experiment in itself."

Robertson, J.H. A quantitative study of true-prairie vegetation after three years of extreme drought. Ecol. Monog. 9(4):432-492, illus. Oct. 1939. 410 Ec72

"Literature cited," p. 491-492.

Weaver, J.E., Robertson, J.H., and Fowler, R.L. Changes in true-prairie vegetation during drought as determined by list quadrats. Ecology 21(3):357-362, illus. July 1940. 410 Ec7

"Literature cited," p. 362.

Water Conservation

Becker, Oscar. Water conservation in the Dakotas. Dakota Farmer 60(2):25, 28-29. Jan. 27, 1940; 60(3):46. Feb. 10, 1940. 6 DL4

Includes cost estimates and data on a few North Dakota projects.

"It has been the desire of the writer to point out in this article that opportunities do exist for farmers to benefit immensely from an intelligent water conservation program. The benefits to be realized, however, depend upon the type and location of the facilities constructed."

Laughlin, Ruth. Coronado's country and its people. Survey Graphic 29(5):277-282, illus. May 1940. 280.8 C37G

Article on economic conditions of the Rio Grande country where water is "magic", illustrated by SCS photographs.

Stewart, G.R. and Nicholson, E.A. Water conservation in Hopi agriculture. Soil Conserv. 6(2):45-48, 51, illus. Aug. 1940. 1.6 So3S

"Hopi agriculture constitutes an interesting combination of traditional ceremonial observance and sound conservation measures

well adapted to semidesert conditions. Floodwater irrigation is the basis of crop production. The source of this floodwater is partly the run-off from the higher land of Black Mesa and partly local run-off which supplies small fields at the base of each mesa. Permanent springs supply water for a series of terrace gardens which produce chile peppers, onions, early corn and green vegetables. Simple brush windbreaks have proved an important aid to the protection of crops of beans, melons and squash. The measures now employed in the Hopi country are suggestive of methods which probably prevailed among the Pueblo villages in the primitive agriculture of the Southwest."

Watersheds

Cowles, M.W., and others. Symposium on recreational use of watersheds. Amer. Waterworks Assoc. Jour. 32(6):1009-1026. June 1940. 292.9 Am32J

Introduction, by M.W. Cowles, p.1009; Out on the good earth, by Lloyd B. Sharp, pp.1010-1012; Need for increased space for recreation, by William Banks, pp.1012-1013; Jurisdiction over sanitation of recreational places, by H.P. Croft, pp.1013-1014; Private recreational development and public health, by W.C. Mallalieu, pp.1014-1015; Regulation of recreation on watersheds and reservoirs, by Russell Van Nest Black, pp.1016-1018; Regulation by the State Water Policy Commission, by H.T. Critchlow, pp.1018-1022; Value of public park systems to Rahway watershed, pp.1022-1024; Effect of multiple use of watershed on conservation, by C.P. Wilber, pp.1024-1026.

Wildlife

Edminster, F.C. Is wildlife management worthwhile to the farmer? Pa. Game News 11(3):6-7, 29, illus. June 1940. 412.9 P38Pe

Johnson, C.E. Waterholes for wildlife. U.S. Natl. Park Serv. Reg. 3 (Santa Fe, N.Mex.) 2(2):9-11. Apr. 1940.

Water requirements of deer in the Southwest; in some areas development of watering facilities might double the wildlife. Suggestions as to improvement of springs and seeps. The article also lists a number of the most valuable wildlife food plants of the Southwest. Abs. U.S. Bur. Biol. Survey Wildlife Rev. no.27, p.30. May 1940.

Wildlife in the farm program. Forest and Outdoors 6(6):183, illus. June 1940. 99.8 C16

"Excerpt from a bulletin by James N. Norton, Pennsylvania Game Commission."

Wind Erosion Control

Cohoe, M.H. Reclamation and protection of Danish Heath areas. U.S. Soil Conserv. Serv. Soil Conserv. 6(2):39-42, illus. Aug. 1940. 1.6 So3S

Outlines the work of the Danish Heath Society related to investigations of types and advantages of hedgerows for wind velocity protection.

Harrison-Smith, J.L. Sand dune reclamation. New Zeal. Jour. Forestry 4(4):227-235, illus. 1939. 99.8 C162

"The sand dunes in Te Kopuru, to the southwest of Dargaville in Auckland district, are formed by sand drifting from old elevated dunes, which in the past had been fixed by native vegetation. Two plants used to stop sand movement are Marram grass (Psamma arenaria) and Lupinus arboreus, which is sown two or three years after the Marram is planted. After another three years trees may be planted to form a permanent vegetation. In order to establish the transplants, lines have to be re-cut through the lupins. Tree species favoured are Pinus pinaster and P. muricata, mainly for windbreak, and P. radiata, Cupressus macrocarpa, Eucalyptus botryoides, and other useful species. Details are given of the work so far undertaken." Abs. Imp. Forestry Bur. Forestry Abs. 2(1): 69. 1940.

Hore, H.L. Sand drift control measures. Victoria Dept. Agr. Jour. 38(5): 219-228, illus. May 1940. 23 V66J

"These remarks are confined mostly to the position as it is found in Victoria. There is, however, a close similarity in the problem here and in South Australia."

Singleton, R.C. Wind-arch-robbing of prairie profits. Forest and Outdoors 6(6):179-180, illus. June 1940. 99.8 C16

"A practical farmer tells how moisture is kept for crop growing by the natural device of shelterbelt growing."

Steele, T.A. Grass and associated vegetation to reclaim Oregon's coastal sand dunes. U.S. Soil Conserv. Serv. Soil Conserv. 6(2):43-44, illus. Aug. 1940. 1.6 So3S

"In the fall of 1935 the Soil Conservation Service, with the aid of a C.C.C. camp, started the exacting task of revegetating the barren, drifting sands of the Clatsop plains area on the western rim of Oregon just south of where the Columbia River discharges into the Pacific. In the October 1936 issue of Soil Conservation, E.M. Rowalt described the area with its destructive surging dunes, and the control program initiated by the Service. The program was then but a year old, and the studies of native and introduced grasses for use in halting the eastward advances of the dunes had just begun. In this article, progress of the work during the past $3\frac{1}{2}$ years is described and illustrated, with special reference to plants that have been found valuable for stabilization of dune areas in this coastal region."

Subsurface tillage becomes popular [in areas where soil erosion, either by washing or blowing is a vital problem]. Idaho Farmer 58(18):448. Aug. 29, 1940. 6 G282

BOOK AND PAMPHLET NOTES AND ABSTRACTS

American society for horticultural science. Proceedings...for 1939, thirty-sixth annual meeting, Columbus, Ohio, December 28, 29 and 30, 1939. Volume 37. 1152pp., illus. Published by the society, May 1940. 81Sol2 v37, 1939

Partial contents: Observations on effects of soil covers as conservation

practices in peach orchards, by J.T.Bregger and A.M.Musser, pp.1-6; The rapid detection of soil moisture, by R.H.White-Stevens and W.C. Jacob, pp.261-266.

Annual review of biochemistry, volume IX. 744pp., illus. Stanford university, Annual reviews, inc., 1940. 381 An7 v.9
Soil microbiology, by S.A.Waksman, pp.509-528.

Association of official seed analysts of North America. Proceedings... 1939, thirty-first annual meeting, Madison, Wis. August 1-4, 1939. 143pp., illus. Published by the association, 1940. 61.9 As7 31st, 1939
Testing of native grass seeds at the Kansas state seed laboratory, by E.L.Norris, pp.101-104.

Association of southern agricultural workers. Proceedings, abstracts of papers and addresses [of] the 41st annual convention... held in Birmingham, Ala. February 7, 8, 9, 1940. 229pp. [n.p.] 1940. 4 C82 41st, 1940

Partial contents: Preliminary observations on run-off from small agricultural watersheds, by D.W.Cardwell, p.28; Review of some preliminary results of run-off experiments at the southern Piedmont experiment station, by J.R.Carreker, pp.29-30; A complete balanced vegetative program for soil conservation, by R.Y.Bailey, pp.69-70; The place of woodland management in the economy of the farm from an agronomic point of view, by J.N.Lowe, pp.123-124; Observations on effects of soil covers as conservation practices in peach orchards, by J.T.Bregger and A.M. Musser, pp.153-154; Proper land use and agricultural balance, by H.H. Bennett, pp.220-221; Land use capabilities, adaptation and use, by E.A. Norton, pp.221-222; Factors to be considered in developing a conservation plan on an individual farm, by W.M.Hardy, p.222; Contributions of soil conservation districts to better land use in the south, by M.W. Lowry and T.W.Webb, p.223; The economic feasibility of conservation practices, by P.H.Walser, pp.223-224; Long-time aspects of the Soil Conservation Service program, by L.P.Merrill, p.225.

Aylen, D. Contour planting and terracing of orchards. Rhodesia, South Dept. Agr. and Lands. Bul. 1148. 13pp., illus. Salisbury, April 1940. 24 R345

Bose, N.K. and Malhotra, J.K. Investigation of interrelation of silt indices and discharge elements for some regime channels in Punjab. Punjab Irrig.Res.Inst.Res.Pub.v.2, no.23. 70pp., illus. Lahore, 1939. 55.9 P96

Results of analytical investigation of observations on silt transportation in Punjab irrigation canal, taking special account of silt particle size and treating silt as physical and hydraulic entity.

Canada. Experimental farms. Report on proceedings under the Prairie farm rehabilitation act for the fiscal year ending March 31, 1938. 33 numb.1., mimeogr. [n.p., n.d.] 281.13 C164 1937-38
Subjects covered are: The Prairie farm rehabilitation act; need for rehabilitation; progress of rehabilitation; cultural phases of the program(cropping practices, soil drifting control); reclamation (regressing projects); land utilization; water development.

Central Colorado river authority. Soil and water conservation districts.

Report of central Colorado river authority, soil and water conservation district, Coleman, Texas, to the United States Department of Agriculture... Subject, water and soil conservation, emergency relief, domestic--farm--live stock and municipalities (combating recurring drouths--excessive run-off) 23pp., typed. Coleman, Texas [n.d.] 292 C332

Flood damage survey, pp. 19-23; Rainfall and discharge - Colorado river, special exhibit in back.

Ceylon. Dept. of agriculture. Sheet erosion and its control. Ceylon.

Dept. Agr. Leaflet 153 (Soil Erosion Leaflet 2) 2pp. [n.p.] 1939. 225 C33L

Dare, H.H. Water conservation in Australia. 112pp., illus. Sydney, Simmons limited, Sept. 1939. 292 D242

Deals with (a) The sources and distribution of surface water in Australia, and the laws governing its use, together with a brief description of the development to date of water conservation schemes in each of the States in the Commonwealth, and of the River Murray Waters scheme.

(b) Underground water supplies, shallow and artesian, including special reference to the Great Australian Artesian Basin.

(c) Products and Marketing - the present position regarding the primary products affected by the conservation of water; concluding with

(d) A short statement concerning the Future of Water Conservation in Australia, based upon [the author's] own experience, but with no attempt to formulate schemes for any State."

Deam, C.C. Flora of Indiana. 1236pp., illus. Indianapolis, Department of conservation, Division of Forestry, June 1940. 455.25 D34F

Di Ricco, Guido. Le irrigazioni nel riguardo tecnico-construttivi.

(Irrigation, its technic and construction) 321pp., illus. Firenze, S.A.G. Barbera editore, 1940. (Biblioteca della bonifica integrale, v.8, part 1) 282 B47 v.8, pt.1

Bibliografia, pp. 307-312.

In Italian.

Friedrich, G.W. The study of conservation. 56pp., illus. [St. Paul?]

Published by the Department of conservation and the Department of education, c1940. 279 F91

"The purpose of this pamphlet is to assist teachers in organizing interesting and worthwhile courses on the subject of conservation..."

Part I... deals with significant aspects of the problem of conservation, and its importance to our continued social and economic progress..."

Part II is a suggested outline for a course of study, in which the main points in the conservation of our natural resources are discussed"..."

Gates, F.C. Annotated list of the plants of Kansas: ferns and flowering plants, with maps showing distribution of species. 266pp., illus.

Topeka, 1940. (Kansas state college. Dept. of Botany. Contr. 391) 455.72 G22A
Lettered on cover: Flora of Kansas.

Inter-American conference on Indian life, Patzcuaro, Mexico, April 1940.

Indians and the land. Contributions by the delegation of the United States. v.p., illus., mimeogr. [n.p.] 1940. 282 In84

Partial contents: Conservation of soil and water in the Americas, by H.H. Bennett (includes table giving estimated annual cost of erosion for the United States); The Indian and the land, by A.G. Harper; Legal aspects of land acquisition, by C.T. Westwood.

Joint committee on roadside development, Highway research board and American association of state highway officials. Reports at the nineteenth annual meeting. 2 parts, processed. Washington, D.C., Highway research board, Division of engineering and industrial research, National research council, Mar. 1940. 288.9 J66, 19th, 1940.

Partial contents: Part I. Slope erosion control, p.4. Part II. Report of subcommittee on erosion (history and development of project, methods, erosion control in the T.V.A. area, emphasis on the use of native plants, certain highway erosion problems outside of right-of-way, slope design and treatment, ditch design and treatment, results of experiment on culvert design, water conservation, slope erosion on county trunk and farm-to-market roads, watershed areas in relation to highway, highway ditches). Appendix IV. Graphic solution of highway ditch design for erosion control.

Kansas state horticultural society. Biennial report... vol. XLV. 342pp., illus. Topeka, 1940. 81 K13 v. 45, 1938-1939

Partial contents: Kansas orchardists must save their rainfall, by R.J. Barnett, pp. 97-100; Urgent water problems, by G.S. Knapp, pp. 205-208.

Kirk, J.M. The weather and climate of Connecticut. Conn. State Geol. and Nat. Hist. Survey. Bul. 61. 242, xi pp., tables. Hartford, 1939. 406 C76 no. 61

Also State of Connecticut Public Document no. 47.

Le Compte, E.L. Soil and wildlife restoration in the farm program. 44 pp., illus. Baltimore, Maryland state game and inland fish commission, 1940. 279 L49

Leonard, W.H. and Clark, A.G. Field plot technique. 271 pp., processed. Minneapolis, Burgess publishing co., cl939. 64 L552F

A manual on field plot technique in which consideration is given to problems involved in accurate experimentation and of the analysis of the data obtained.

McGauhey, P.H. and Snyder, H.B., jr. Hydrology of Virginia. Part II, Flood studies; Storms that have caused great floods; great rainfalls. Va. Polytech. Inst. Bul. v. 33, no. 10 (Engin. Expt. Sta. Ser. 44) 94 pp. Blacksburg, May 1940. 290.9 V812

Madden, E.A. The grasslands of the North Island of New Zealand. New Zeal. Dept. Sci. and Indus. Res. Bul. 79. 45 pp., illus. Wellington, 1940. 330.9 N48B

A description of seventeen types of pasture and other land utilization and features. 9 percent of the total land area is scrub, and over

33 percent is in forest and eroded country. Some of the high-altitude country is badly eroded and devoid of vegetation. There is distinct danger of further soil erosion unless protective measures are taken.

Maher, Colin. A visit to the United States of America to study soil conservation. 81pp. Nairobi, Printed by the govt.printer,1940. 56.7 M27
"References," pp.73-77.

The author, who visited the United States in 1939 writes of the following subjects: The Soil conservation service; cooperative agreements and soil conservation districts; soil erosion, land utilization and soil conservation in parts of the U.S.A; experiment stations; The Civilian conservation corps; soil conservation education; factors influencing soil erosion in the United States and the main measures employed in conserving soil and water; the significance of soil erosion and soil conservation in the U.S.A. in relation to conditions in Kenya colony.

Matthews, G.D. Snow utilization in prairie agriculture. Canada Dept. Agr. Pub. 696 (Farmers' Bul. 95) 21pp., illus. Ottawa, May 1940. 7 C16F na696

Discusses experiments to accumulate snow on fields, snow-ploughs used, water in accumulated snow, weed seeds in drifted snow, fertilizing value of water from snow, influence on yield of field crops and influence of snow conservation on soil moisture.

Minnesota resources commission. Water resources committee. Conserving our rainfall... 23pp., illus. St. Paul, Apr. 1940. 292 M663C

One of a series of short discussions which will serve as a guide to show the people of the state of Minnesota what they may do to conserve the water supply.

Nebraska state board of agriculture. Annual report...for the year 1939. 613pp., illus. [Lincoln 1940?] 2 N27R

Success with bromegrass, by E.H. Doll, pp.109-113.

Nodland, T.R. and Pond, G.A. Fifth annual report of the soil conservation farm management service for the year 1939. Minn. Dept. Agr. Div. Agr. Econ. Mimeo. 115. 24pp., mimeogr. St. Paul, Apr. 1940. 281.9 M66

Issued in cooperation with the U.S. Soil Conservation Service.

Farm account records of 91 farms in the soil conservation demonstration area of Minnesota, giving information as to inventories, amount of livestock; earnings; analysis of reasons for differences in earnings; effect of well-balanced efficiency on operators' earnings; measures of farm organization and management efficiency; thermometer chart; distribution of acres in farm; crop yields; feed costs; summary of farm earnings by areas; distribution of acres in farm and crop yields, by areas; measures of farm organization and management by areas.

North Central state entomologists. Proceedings, eighteenth annual meeting... St. Paul, Minnesota, March 23-24, 1939. 100pp., mimeogr. [n.p., n.d.] 422.12 N81

White grubs and soil conservation, by D.B. Whelan (read by J.A. Callenbach) pp. 53-54.

Northwest regional council. Soil conservation in outline. 38 numb.1., mimeogr. Portland, June 1940. 280.7 N8199S

"The material in this publication was compiled by John B. Appleton..."

"This outline, one of the Know Your Northwest Series...contains a rather full statement of the basic facts concerning soil and its management, with special reference to conditions in the Pacific Northwest. The present publication is an elaboration of a portion of the 'Land' section in Pacific Northwest Resources in Outline..."

"The preparation of this type of outline was undertaken for several reasons:(1)to present in non-technical language the most important facts about soils and soil conservation in the Pacific Northwest in a form that makes them readily adaptable to classroom presentation; (2)to aid teachers whose schools have inadequate library facilities by bringing together material derived from a wide variety of published sources and from field observations; (3)to suggest sources of information that can be used readily by those seeking additional material; and, (4)to serve as a guide in the construction of comprehensive study units for specific levels."

Rice,C.M. Dictionary of geological terms(exlusive of stratigraphic formations and paleontologic genera and species. 461pp.,processed. Ann Arbor, Edwards brothers,inc.,1940. 400 R36

Southern California water and soil conservation conference. Southern California water and soil conservation conference featuring the management of storm and other waters for beneficial use... 49 numb.1., mimeogr. [n.p.,1939] 290.9 So83

Papers of interest are:Watershed management for water production, by E.I.Kotok,pp.1-4;The place of conservation in the work of the army engineers, by C.K.Lewis,pp.5-8;Flood control as a by-product of water conservation, by F.D.Pyle,pp.9-15;Water problems of Santa Barbara county, by W.C.Penfield,pp.16-20;Use of flood control reservoirs for water conservation, by Paul Bailey,pp.21-22;Water conservation by spreading, by Paul Bauman,pp.23-28;Soil conservation in relation to the conservation of water, by H.E.Reddick,pp.29-31;Need for an integrated plan of flood control and water conservation, by B.M.Woods,pp.32-35; Flood control activities and policies of the state of California, by Edward Hyatt,pp.36-39;Soil conservation in relation to the conservation of water, by J.F.Johnston,pp.46-49.

Utah academy of sciences,arts and letters. Proceedings...volume XVI, 1939. 120pp. Salt Lake City,1939. 500 Ut1 v.16,1938/39

Partial contents:An annotated list of Utah grasses, by B.F.Harrison, pp.23-35;A preliminary study of some physical and chemical characteristics of soils under sagebrush, shadscale and winterfat(abstract)by A.C.Hull,jr.and T.L.Martin,p.39.

White,W.N.,Gale,H.S.and Nye,S.S. Ground-water resources of the Balmorhea area in western Texas. 80 numb.1.,mimeogr. [Austin,Texas?] Feb. 1938. 292 W58

STATE EXPERIMENT STATION AND EXTENSION PUBLICATIONS

Colorado

Nelson, E.W. and Shepherd, W.O. Restoring Colorado's range and abandoned croplands. Colo. Agr. Expt. Sta. Bul. 459. 31pp., illus. Fort Collins, April 1940. 100 C71 Sno. 459

Hawaii

Coulter, J.W. Agricultural land use planning in the territory of Hawaii. Hawaii Agr. Ext. Serv. Bul. 36. 124pp., illus. Honolulu, June 1940. 275.29 H312E
Table 5, Land utilization in the Hawaiian Islands.
Table 15, Acreage of eroded lands in Hawaii.
This monograph is in part a revision of Research Publication no. 8, University of Hawaii, 1933 entitled: Land utilization in the Hawaiian Islands, by J.W. Coulter.

King, Norman. Check dams for erosion control. Hawaii Agr. Ext. Serv. Cir. 81. 6 numb. 1., illus., mimeogr. [Honolulu?] Apr. 1940. 275.29 H312Ac
Attention is drawn to the use of check dams as a means of controlling gully erosion which is common in Hawaii "and attains proportions approaching complete devastation of certain ranch and farming lands".

King, Norman. Outlet channels for flood waters. Hawaii Agr. Ext. Serv. Cir. 82. 3 numb. 1., illus., mimeogr. [Honolulu] Apr. 1940. 275.29 H312Ac
As a general aid in channel designing for average Hawaiian conditions tabulated data on calculated water runoff for various acreages of watershed, pasture and cultivated land is given.

Illinois

Sauer, E.L., Krusa, C.H., Reiss, F.J. and Case, H.C.M. Summary of farm account record study on 90 farms in Edwardsville soil conservation area, Madison and St. Clair counties, Illinois, 1939. Ill. Univ. Col. Agr. Agr. Ext. Serv. [Pub.] AE1421. 33pp., mimeogr. Urbana, June 1940. 275.29 I162P no. AE1421

Sauer, E.L., Morgan, C.C., Reiss, F.J. and Case, H.C.M. Summary of farm account record study on 110 farms in Leroy soil conservation area, McLean county, Illinois, 1939. Ill. Univ. Col. Agr. Agr. Ext. Serv. [Pub.] AE1426. 34pp., mimeogr. Urbana, June 1940. 275.29 I162P no. AE1426

Lists 11 trends and facts derived from the data which serve as indicators relative to income, yields, operating expenses, land adjustments, size of farms, tenure problems, livestock, utilization of legumes and non-legume roughage, increased efficiency of livestock enterprises, products of conservation program and contour farming.

Indiana

Shipman, Russell, Pence, M.O., Shaw, T.E. and McCown, Monroe. Making the soil building practices of the soil conservation program more effective. Purdue Agr. Ext., Ext. Bul. 245. 12pp., illus. Lafayette, Apr. 1940. 275.29 In2E
Developing a soil improvement-land use program; use of fertilizers;

pasture improvement; commercial orchards and small fruits; erosion control; forestry practices; windbreaks; wildlife plantings.

Kentucky

Roberts, George. Save the soil and improve it. Ky.Agr.Col.Ext.Cir. 350. 15pp., illus. Lexington, June 1940. 275.29 K415 no.350

Massachusetts

Beaumont, A.B. A key to Massachusetts soils. Mass.Agr.Col.Ext.Serv. Spec.Cir.64. 22pp., illus., mimogr. [Amherst]June 1940. 275.29 M381Scm64

Minnesota

Engene, S.A. and Pond, G.A. Agricultural production and types of farming in Minnesota. Minn.Agr.Expt.Sta.Bul.347. 70pp., illus. [University Farm, St.Paul]May 1940. 100 M66 no.347

There is also a statistical supplement giving much of the basic data used in the preparation of Bulletin 347.

Missouri

Missouri agricultural experiment station. Research in agriculture. Work of the agricultural experiment station during the year ending June 30, 1937. Mo.Agr.Expt.Sta.Bul.413. 120pp., illus. Columbia, Jan.1940. 100 M693 no.413

Mechanical analysis of colloidal soil(C.E.Marshall)pp.92-93; The colloidal nature of soil organic matter(L.D.Baver)p.93; The nature of soil structure and its influence upon soil tillage(L.D.Baver)p.93; The use of corn stalks and straw in soil building(W.A.Albrecht, J.C.Wooley) pp.94-95; Soil erosion and runoff(M.F.Miller, H.H.Kruskopf, L.D.Baver, J.H.Neal)pp.96-97; Effect of rainfall impact on soil erosion(L.D.Baver, J.H.Neal,p.97.

Nebraska

Cushing, R.L., Kiesselbach, T.A. and Webster, O.J. Sorghum production in Nebraska. Nebr.Agr.Expt.Sta.Bul.329. 58pp., illus. Lincoln, June 1940. 100 N27 no.329

New Jersey

Waller, A.G. and Carncross, J.W. Land use and crop practice survey, Franklin and Harrison townships, Gloucester county. N.J.Agr.Col. Dept.Agr.Econ.Rutgers Univ.A.E.38. 18pp., processed. New Brunswick, 1940. 281.9 R93

In cooperation with United States Department of Agriculture.

Waller, A.G. and Carncross, J.W. Land use and crop practice survey, Hammonton township, Atlantic county. N.J.Agr.Col.Dept.Agr.Econ. Rutgers Univ.A.E.32. 12pp., processed. New Brunswick, 1939. 281.9 R93

New Mexico

Botkin,C.W. Pinon nuts as a food crop. N.Mex.Agr.Expt.Sta.Press Bul.899. 1 p.,mimeogr. [Mesilla Park]Feb.27,1940. 100 N465 no.899 Brief discussion of uses for pinon nuts, including a statement of the value of the pinon forest as a protection from excessive erosion.

Cockerill,P.W.,Hunter,Byron and Pingrey,H.B. Type of farming and ranching areas in New Mexico.Part II. N.Mex.Agr.Expt.Sta.Bul.267. 134pp.,illus. State College,December 1939. 100 N465 no.267

"The results of the study of types of farming and ranching in New Mexico conducted cooperatively by the New Mexico Agricultural Experiment Station and the Bureau of Agricultural Economics of the United States Department of Agriculture have been published in two separate bulletins: Part I and Part II. Part I,Bulletin no.261,sketches the agricultural development of New Mexico and presents the reasons for making the study,the basis for classifying the farms into types, and the major types of land tenure.It presents,further,a discussion of the physical, biological and economic factors which have influenced and largely determined the kinds of farming and ranching to be found in different parts of New Mexico.Lastly,it includes a series of figures which show approximately where the principal crops are grown,where the different kinds of livestock are produced and where the more important types of farming are carried on."

"Part II,Bulletin 267,presents a somewhat detailed description of each of the type-of-farming areas and also of the subareas. Both Parts I and II should be read in order to obtain a comprehensive understanding of the agriculture of the State."

Hardy,E.L.,Overpeck,J.C.and Wilson,C.P. Precipitation and evaporation in New Mexico. N.Mex.Agr.Expt.Sta.Bul.269. 68pp.,illus. State College,Dec.1939. 100 N465 no.269

North Carolina

[Atkins,S.W.] Summary of farm business and farm labor used,Cedar creek soil conservation project area,Franklin county,North Carolina,1938. N.C.Agr.Expt.Sta.Dept.Agr.Econ.and Rural Sociol.AE-RS Inform.Ser.5. 5 numb.1,17 tables,mimeogr. [n.p.]Oct.1939. 100 N811 no.5

Table 1,General land use on 43 farms,Franklin county,1938;Table 2, Estimated capital per farm on 43 farms, Franklin county, 1938;Table 9, Comparison of 14 high and 14 low farms according to labor income, Franklin county, 1938;Comparison of 27 farms cooperating with Soil Conservation Service and 16 other farms, 1938;Table 11-16, Hours of man and horse labor for corn,cotton and tobacco.

Pennsylvania

Haswell,J.R. Drain the wet spots. Pa.State Col.Ext.Cir.112. 34pp., illus. State College,Feb.1940. 275.29 P38C no.112

South Dakota

South Dakota state college of agriculture. Extension service. Holding soil and water. The how and why of soil conservation districts. S.Dak.Agr.Col.Spec.Ext.Cir.50. [8]pp.,illus. Brookings, June 1940. 275.29 So85Sp no.50

Tennessee

Arnold, H.A. Lespedeza seed-harvesting equipment. Tenn.Agr.Expt.Sta. Bul.171. 20pp.,illus. Knoxville, Mar.1940. 100 T25S no.171

Martin, G.E. The field mechanics of terracing. Tenn.Agr.Col.Ext.Serv. Spec.Cir.72. rev.ed.,12pp.,mimeogr. Knoxville, May 1938. 275.29 T25C no.72

Washington

Washington agricultural experiment station. Forty-ninth annual report for the fiscal year ended June 30,1939. Wash.Agr.Expt.Sta.Bul.384. 101pp. Pullman, Dec.1939. 100 W27E Bul.384

Soil and water conservation experiment station, Glenn M.Horner in charge, pp.86-88, includes reports on studies in soil erodibility; effect of plant cover on runoff and erosion; relation of cropping practices to erosion control;tillage practices for erosion control;runoff from agricultural watersheds.

Nursery division, Soil conservation service, A.L.Hafenrichter, regional chief, pp.88-92.

West Virginia

Humphreys, Gertrude. The family and the land. W.Va.Agr.Col.Ext.Serv. Good Living Ser.VIII.Lesson 6(D). 6pp. Morgantown[1940?] 275.29 W522G

U. S. GOVERNMENT PUBLICATIONS

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"The purposes of this bulletin are to indicate educative goals and values which are peculiar to the conservation excursion, to point out particular contributions to curriculum content and activity which can be achieved through excursions for the study of different phases of conservation, and to suggest methods and techniques of planning and conducting excursions for the aid of teachers who are particularly interested in conservation education." -Foreword.

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"The Comptroller General has from time to time upset the plans of progressive administrators by his adverse rulings on the right of officials to provide for certain types of employee training and thus to increase the usefulness of specific government activities to the public. In this article Mr. Murphy examines the course of these decisions and

comes to the conclusion that a legislative correction must be made or the Comptroller General will have to broaden his concept of the scope of discretion required to make good management possible, if the present trend of decisions is to be changed.

"The author, who is a personnel technician with the Department of Labor, pays particular attention to the problem of detailing employes to educational and other institutions for study, and has discussed only briefly the question of the legality of in-service training programs conducted within an agency for its own employes."

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